

**ENCLOSURE 1**

**NUCLEAR MANAGEMENT COMPANY**

**DUANE ARNOLD ENERGY CENTER  
DOCKET 50-331**

**KEWAUNEE NUCLEAR POWER PLANT  
DOCKET 50-305**

**MONTICELLO NUCLEAR GENERATING PLANT  
DOCKET 50-263**

**PALISADES NUCLEAR PLANT  
DOCKET 50-255**

**POINT BEACH NUCLEAR PLANT UNITS 1 AND 2  
DOCKETS 50-266 AND 50-301**

**PRAIRIE ISLAND NUCLEAR GENERATING PLANT UNITS 1 AND 2  
DOCKETS 50-282 AND 50-306**

**October 31, 2003**

**NMC QUALITY ASSURANCE TOPICAL REPORT  
NMC-1  
REVISION 0a**

**Note that the QATR is submitted unsigned as Revision 0a. Upon NRC approval it will be signed and issued as Revision 0.**

**43 Pages Follow**

Nuclear Management Company, LLC  
Hudson, Wisconsin

Quality Assurance Topical Report

NMC-1

(Revision 0a for NRC Review)

## Nuclear Management Company, LLC – Policy

### Policy Statement

Nuclear Management Company, LLC (NMC) shall maintain and operate nuclear plants in a manner that will ensure the health and safety of the public and workers. Facilities shall be operated in compliance with the requirements of the Code of Federal Regulations (CFR), the applicable Nuclear Regulatory Commission (NRC) Facility Operating Licenses, and applicable laws and regulations of the state and local governments.

The NMC Quality Assurance Program (QAP) described herein and associated implementing documents provide for control of NMC activities that affect the quality of safety related nuclear plant structures, systems, and components. The QAP is also applied to certain equipment and activities that are not safety related, but support safe plant operations, or where other non-CFR NRC guidance establishes program requirements.

The Quality Assurance Topical Report (QATR) is the top-level policy document that establishes the manner in which quality is to be achieved and presents NMC's overall philosophy regarding achievement and assurance of quality. Implementing documents assign more detailed responsibilities and requirements and define the organizational interfaces involved in conducting activities within the scope of the QATR. Compliance with the QATR and implementing documents is mandatory for personnel directly or indirectly associated with implementation of the NMC QAP.

Signed \_\_\_\_\_

President and Chief Executive Officer  
Nuclear Management Company, LLC

**Nuclear Management Company, LLC**

**Quality Assurance Topical Report**

**NMC-1**

**Revision 0a**

**Approved by:**

\_\_\_\_\_  
Michael B. Sellman  
President and Chief Executive Officer

\_\_\_\_\_  
Date

\_\_\_\_\_  
David J. Jantosik  
Director, Nuclear Oversight

\_\_\_\_\_  
Date

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# **Nuclear Management Company Quality Assurance Topical Report**

## **Introduction**

The NMC Quality Assurance Topical Report describes the methods and establishes quality assurance program and administrative control requirements that meet 10CFR50, Appendix B and apply during the operational phase of plant life. However, this Quality Assurance Topical Report (QATR) is organized and formatted to respond to NRC Standard Review Plan (NUREG 0800) Section 17.3 (Revision 0 – August 1990). NMC has chosen this approach because it best represents the NMC commitment to the philosophy that each individual, properly trained and motivated, achieves the highest quality of performance of which they are capable. In addition, the NMC uses this emphasis on individual performance to reinforce the importance of self-assessments (by the group responsible for the activity) and independent assessments (by groups not responsible for the activity) to achieving excellence.

# **Nuclear Management Company Quality Assurance Topical Report**

## **A. Management**

### **A.1 Methodology**

The Quality Assurance Topical Report (QATR) is the top-level policy document that establishes the quality policy and assigns major functional responsibilities for plants operated by NMC. The following requirements apply to all organizations and positions that manage and perform activities within NMC's scope. The NMC organization is committed to implementing these requirements. NMC personnel engaged in supporting nuclear generation shall comply with the requirements of the Quality Assurance Program (QAP) described in this QATR. Contractors, or other organizations supporting NMC, including Asset Owners, are required to comply with the QAP established by this QATR, or with their own programs having appropriate scope and controls in accordance with A.2. All facilities shall be operated in compliance with the applicable Code of Federal Regulations, NRC Operating Licenses, and the applicable laws and regulations of the state and local governments in which the facility is located.

Operating service agreements exist between Nuclear Management Company, LLC; and the nuclear power plant owner organizations to establish responsibilities and authorities, consistent with each facility's NRC Operating License, for the operation and maintenance of said facilities. These agreements designate NMC as the exclusive licensee authorized to operate Duane Arnold Energy Center, Kewaunee Nuclear Power Plant, Monticello Nuclear Generating Plant, Point Beach Nuclear Plant, Palisades Nuclear Plant, and Prairie Island Nuclear Generating Plant in accordance with the terms and conditions of their respective licenses.

The NMC QAP comprises those planned and systematic actions necessary to provide confidence that structures, systems, and components will perform their intended safety functions. The QAP consists of the NRC approved regulatory document that describes the quality assurance program elements (the QATR) along with the associated corporate, fleet, and site implementing documents. Corporate Directives establish high level responsibilities and authority for carrying out important functions. Fleet Procedures establish common practices for certain activities such that the activity is controlled and carried out in a manner that meets QAP requirements. Site and department procedures establish detailed implementation requirements and methods, and may be used to implement Corporate Directives and Fleet Procedures or be unique to particular functions or work activities. In addition, to provide a clear understanding of NMC operating philosophy, NMC establishes rules of practice pertaining to personnel conduct and control, including consideration of job related factors which can influence the effectiveness of operating and maintenance personnel, including such factors as number of hours at duty station, availability on-call of professional and supervisory personnel, method of conducting operations, and preparing and retaining plant documents. Such rules are contained within appropriate implementing documents.

The QAP applies to activities affecting the performance of safety-related structures, systems and components, including, but not limited to, design; procurement; fabrication; installation; modification; maintenance; repair; refueling; operation; training, inspection; and tests.\* A list, or other means of identification, of safety related Systems, Structures, and Components (SSC) under the control of the QAP is established and maintained for each operating plant. The technical aspects of the items are considered when determining program applicability, including, as applicable, the item's design safety function, results of probabilistic safety analysis, the ASME Code and the other references cited in section A.7.3 of this QATR. The QAP is also applied to certain activities where regulations other than 10CFR50 establish QA program requirements for activities within their scope. Thus, this QATR is applied to the "important to

## **Nuclear Management Company Quality Assurance Topical Report**

safety” activities of radioactive waste shipping and independent spent fuel storage, as defined in those NRC regulations, as allowed by 10CFR71.101.f and 10CFR72.140.d.

It is NMC's policy to assure a high degree of availability and reliability of its nuclear plants while ensuring the health and safety of the public and its workers. To this end, selected elements of the Quality Assurance Program are also applied to certain equipment and activities that are not safety related, but support safe and reliable plant operations, or where other non-CFR NRC guidance establishes program requirements. These include, but may not be limited to, emergency preparedness, security, radiation protection and fire protection. Implementing documents establish program element applicability.

Activities affecting quality are prescribed by and performed according to documents (such as instructions, procedures or drawings) of a type appropriate to the circumstances and which, where applicable, include quantitative or qualitative acceptance criteria. Such documents are prepared and controlled according to section B.14. In addition, means are provided for dissemination to plant staff of instructions of both general and continuing applicability (e.g., dealing with job turnover and relief, designation of confines of the control room, limitations on access to certain areas), as well as those of short-term applicability (e.g., dealing with short-term operating conditions, publications, personnel actions). Provisions are included for review, updating, and cancellation of such instructions.

In establishing, implementing and maintaining the QATR, NMC commits to compliance with ASME NQA-1, 1994, Basic Requirement 2. QATR revisions are reviewed by NMC Senior Management and approved by the NMC Chief Nuclear Officer. Changes to this QATR will be governed by and made in compliance with 10CFR50.54(a).

In establishing procedural controls, NMC commits to compliance with NQA-1, 1994, Basic Requirement 5. In addition, as stated in position C.1 of Regulatory Guide 1.33, Revision 2, NMC commits to use Appendix A of Regulatory Guide 1.33 as guidance for establishing the types of procedures that are necessary to control and support plant operation. Requirements specific to procedures are also provided in Appendix C.

\*As NMC is an organization whose purpose is operating nuclear power plants, this QATR does not address “decommissioning” as an activity within its scope. Should NMC become involved in plant decommissioning, this QATR will be revised, or a separate QATR developed, to assure appropriate programmatic controls are applied to that activity.

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## **A.2 Organization**

This section describes the NMC organizational structure, functional responsibilities, levels of authority and interfaces for establishing, executing, and verifying QAP implementation. The organizational structure includes corporate functions and onsite functions at each plant. Implementing documents assign more specific responsibilities and duties, and define the organizational interfaces involved in conducting activities and duties within the scope of this QATR.

The NMC Chief Executive Officer has overall responsibility for establishing quality policy and implementation of the quality program. The authority to accomplish quality assurance functions is delegated to the staff as necessary to fulfill the identified responsibilities.

Personnel executing performance activities and those performing verification activities are functionally independent to the degree commensurate with the activity's relative importance to safety. The method and extent of verification is commensurate with importance of the activity to plant safety and reliability. The organization executing independent assessment activities maintains independence from the organization(s) performing the activity being assessed. Management positions are established both offsite and onsite for carrying out the independent assessment functions. Individuals filling these positions:

- Have sufficient authority and organizational freedom to implement their assigned responsibilities, including authority to obtain access to records and personnel as needed to perform assessments.
- Report to a sufficiently high management level to ensure that cost and schedule considerations do not unduly influence decision making.
- Have effective lines of communication with persons in other senior management positions.
- Have no unrelated duties or responsibilities that would preclude full attention to assigned responsibilities.

Responsible individuals or organizations may delegate any or all of their responsibility. When work is delegated to personnel or organizations outside of NMC, including Asset Owners, the responsibility for the program effectiveness and the work is retained by NMC, and the delegation shall be identified and described such that:

- The organizational elements responsible for the work are identified.
- Management controls and lines of communication are established.
- Responsibility for an appropriate QAP and extent of NMC management oversight is established.
- Performance of delegated work is formally evaluated by NMC.

In establishing its organizational structure, NMC commits to compliance with NQA-1, 1994, Basic Requirement 1 and Supplement 1S-1. Management gives careful consideration to the timing, extent and effects of organizational structure changes.

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### **A.2.1 Corporate Organization**

The following positions have the described corporate functional responsibilities:

#### A.2.1.1 Chief Executive Officer (CEO)

This position is responsible for overall corporate policy and implementation of the QAP. Provides executive direction and guidance for the corporation as well as promulgates corporate policy through NMC's senior management staff. Overall responsibility for the implementation of the QAP is delegated to the Chief Nuclear Officer.

#### A.2.1.2 Chief Nuclear Officer (CNO)

This position reports to the CEO of NMC and has overall responsibility for the safe and reliable operation of nuclear stations operated by NMC. This responsibility includes setting and implementing policies, objectives, and priorities to ensure activities are performed in accordance with QAP and other corporate requirements. The CNO is designated as the Company Officer responsible for assuring that defects and non-compliances are reported to the NRC as required by 10CFR21.

##### A.2.1.2.a Senior Vice Presidents

These positions report to the CNO and are responsible for nuclear plant operations and support via staff at both the corporate and site levels. Responsibilities include operations and Corporate level operations support, engineering services and programs, nuclear fuels, high level waste, chemistry, environmental, industrial safety, radiation protection and radioactive waste, emergency planning, training, regulatory services, security, corrective action program, procurement services, outage management and business support. Some of these responsibilities may be assigned to Site Vice President(s) at the discretion of the CNO.

##### A.2.1.2.b Vice President Nuclear Assessment Programs

This position reports to the CNO and is responsible for activities that include establishing quality assurance practices and policies (including this QATR); managing independent assessment (Nuclear Oversight (NOS)) and establishing quality control practices and policies for quality verification activities; initiating stop work, requesting any other actions deemed necessary to avoid unsafe plant conditions or a significant violation of the QAP; periodically apprising the CEO and CNO of the status of the quality assurance program at NMC facilities and immediately apprising them of significant problems affecting quality; and verifying implementation of solutions for significant conditions adverse to quality identified by NOS.

###### A.2.1.2.b.1 Director Nuclear Oversight

This position reports to the VP Nuclear Assessment and is responsible for establishing, maintaining, and interpreting NMC quality assurance policies and procedures; establishing the requirements for assessor and inspector certification; managing the overall independent assessment process; establishing quality control practices and policies for quality verification activities; and controlling and maintaining the QATR. Additionally this position provides for supplier evaluation; the conduct of supplier assessments or surveys (including their sub-tier suppliers); and verification that supplier quality assurance programs comply with NMC requirements. This position entails Stop Work authority at the sites and corporate offices.

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## **A.2.2 Site Organization**

The following site NMC management positions describe the typical site QAP functional responsibilities, which may be delegated to others as established in this document. Some titles and reporting relationships may vary at some sites, but in all cases there is a designated position to carry out the defined responsibilities. The on-site operating organization includes one or more individuals knowledgeable in the following fields: nuclear power plant operation; nuclear power plant mechanical, electrical and electronic systems; nuclear engineering; chemistry and radiochemistry; radiation protection; and quality assurance. Site procedures provide detailed organizational descriptions.

### **A.2.2.1 Site Vice President (SVP)**

This position reports to a Senior Vice President or the CNO, and is responsible for overall plant nuclear safety and the implementation of the QAP. This position is also responsible for station compliance with NRC operating license, governmental regulations, and ASME Code requirements, if applicable, and provides day-to-day direction and management of plant operations activities.

#### **A.2.2.1.a Site Director**

This position reports to the Site Vice President and is responsible for plant operations and maintenance, training and project management, and functionally for site engineering and regulatory affairs.

#### **A.2.2.1.b Plant Manager**

This position reports to the Site Director and is responsible for plant operations. This position assures the safe, reliable, and efficient operation of the plant within the constraints of applicable regulatory requirements, operating license, and the QAP. Functional areas of responsibility also include chemistry activities, environmental services, fuel handling (receipt, movement, and storage), health physics/radiological protection, operations and support, maintenance and production planning, and related procedures and programs. The Plant Operating Review Committee reports to the Plant Manager and provides review of plant safety and performance (see Appendix A).

#### **A.2.2.1.c Training Manager**

This position reports to the Site Director and is responsible for training. The Training Manager provides direction, control, and overall supervision of personnel as required by regulations and training for all site personnel as required. Functional areas of responsibility include training support services, technical training, and operations training.

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A.2.2.1.d Business Support Manager

This position reports to the SVP and is responsible for procedures administration, document control, records management, information technology, business processes, procurement, security, finance, and emergency planning.

A.2.2.1.e Site Engineering Director

This position reports to a Corporate Vice President (offsite) and functionally to the Site Director, and has functional areas of responsibility that include authority for day-to-day engineering support activities, design engineering, engineering document control, engineering administration, modifications and their implementation, plant design configuration control, reactor engineering, system engineering, system testing, and technical support.

A.2.2.1.f Regulatory Affairs Manager

This position reports to a Corporate Director (offsite) and functionally to the Site Director, and is responsible for site regulatory interfaces and licensing actions.

A.2.2.1.g Performance Assessment Manager

This position reports to the SVP and is responsible for administration of the corrective action, self-assessment and industry operating experience programs.

A.2.2.1.h Site Nuclear Oversight Manager

This position reports to the Director Nuclear Oversight (offsite) and is responsible for site NOS activities. Significant safety or quality issues requiring escalated action are directed through this position to senior NOS management, as necessary. Functional responsibilities include conducting independent assessments of line and support activities; monitoring and assessing day-to-day station activities; stop work authority at the site; periodic reporting on the status and adequacy of the quality program; and providing quality verification and inspections.

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### **A.3 Responsibility**

NMC retains and exercises the responsibility for the scope and implementation of an effective QAP. Positions identified in A.2 may delegate all or part of the activities of planning, establishing, and implementing the program for which they are responsible to others, but retain the responsibility for the program's effectiveness. Decisions affecting safety are made at the level appropriate for its nature and effect, and with any necessary technical advice or review.

Senior management is regularly apprised of assessment results evaluating the adequacy of implementation of the QAP through the assessment functions described in section C.

NMC ensures that the QAP is properly documented, approved and implemented before an activity within the scope of the program is undertaken. Management is responsible to assure that processes and procedures comply with QATR and other applicable requirements, and that employees comply with them. Individual managers ensure that personnel working under their management cognizance are provided the necessary training and resources to accomplish their assigned tasks. Managers and supervisors are responsible for timely and continuing monitoring of performance to verify that day-to-day activities are conducted safely and in accordance with applicable requirements.

As described in C.3, Nuclear Oversight is responsible to verify that processes and procedures comply with QATR and other applicable requirements, that such processes or procedures are implemented, and that management appropriately ensures compliance.

Documents that implement the quality program are approved by responsible management; distributed; and revised in accordance with procedures. Work within the scope of the QAP is accomplished in accordance with these documents.

In addition, operating personnel responsibilities include:

- The reactor operator's authority and responsibility for shutting down the reactor when it is determined that the safety of the reactor is in jeopardy or when operating parameters exceed any of the reactor protection system set-points and automatic shutdown does not occur.
- The responsibility to determine the circumstances, analyze the cause, and determine that operations can proceed safely before the reactor is returned to power after a trip or an unexplained or unscheduled power reduction.
- The senior reactor operator's responsibility to be present at the plant and to provide direction for returning the reactor to power following a trip or an unscheduled or unexplained power reduction.
- The responsibility to believe and respond conservatively to instrument indications unless they are proved to be incorrect.
- The responsibility to adhere to the plant's Technical Specifications.
- The responsibility to review routine operating data to assure safe operation.
- The responsibility to take action to minimize personnel injury or damage to the facility and to protect the health and safety of the public in the event of an emergency not covered by approved procedures.

In establishing QAP responsibilities, NMC commits to compliance with NQA-1, 1994, Basic Requirement 1 and Supplement 1S-1.

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### **A.4 Authority**

When NMC delegates responsibility for planning, establishing, or implementing any part of the overall QAP, sufficient authority to accomplish the assigned responsibilities is delegated. Regardless of delegation, NMC retains overall responsibility.

Responsibility and authority to stop unsatisfactory work, as delineated in section A.2, includes authority to control further processing, delivery, installation, operation or use of nonconforming items. This assures that cost and schedule considerations do not override safety considerations.

In establishing QAP authorities, NMC commits to compliance with NQA-1, 1994, Basic Requirement 1 and Supplement 1S-1.

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### **A.5 Personnel Training and Qualification**

Personnel assigned to implement elements of the QAP must be capable of performing their assigned tasks. To this end NMC establishes and maintains formal indoctrination and training programs for personnel performing, verifying or managing activities within the scope of the QAP to assure that suitable proficiency is achieved and maintained. Sufficient managerial depth is provided to cover absences of incumbents. When required by code, regulation, or standard, specific qualification and selection of personnel is conducted in accordance with those requirements as established in the applicable NMC procedures. Indoctrination includes the administrative and technical objectives, requirements of the applicable codes and standards, and the QAP elements to be employed. Records of personnel training and qualification are maintained.

In establishing qualification and training programs, NMC commits to compliance with NQA-1, Basic Requirement 2 and Supplements 2S-1, 2S-2, 2S-3 and 2S-4, with the following clarifications and exceptions:

- For Supplement 2S-1: Inspections, examinations or tests may be performed by individuals in the same organization as that which performed the work, provided that (a) the qualifications of the inspector for an activity are equal to or better than the minimum qualifications for persons performing the activity, (b) the work is within the skills of personnel and/or is addressed by procedures, and (c) if work involves breaching a pressure-retaining item, the quality of the work can be demonstrated through a functional test. When a, b and c are not met, inspections, examinations or tests are carried out by individuals certified in accordance with Supplement 2S-1. Individuals performing visual inspections required by the ASME Boiler and Pressure Vessel Code are qualified and certified according to Code requirements.
- In lieu of Nonmandatory Appendix 2A-1, NMC does not establish levels of qualification/certification for inspection personnel. Instead, NMC establishes initial qualification requirements and determines individual qualification through evaluation of education, training and experience, and through demonstration of capability in performing the type of inspections expected on the job.
- For Supplement 2S-2: NMC may implement other versions of ASNT SNT-TC-1A, or other ASME Boiler and Pressure Vessel Code(s) or national standards, as applicable to the particular work involved, such as Inservice Inspection per 10CFR50.55a.
- For Supplement 2S-3: The requirement that prospective Lead Auditors have participated in a minimum of five (5) audits in the previous three (3) years is replaced by the following, "The prospective lead auditor shall demonstrate his/her ability to properly implement the independent assessment (audit) process, as implemented by NMC according to section C.3 of this QATR, to effectively lead an assessment team, and to effectively organize and report results, including participation in at least one independent assessment or audit within the year preceding the date of qualification." Also, replace the term "audit" throughout with the term "independent assessment."

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### **A.6 Corrective Action**

NMC management, at all levels, fosters a non-punitive (“no-fault”) attitude toward the identification of conditions adverse to quality. This includes failures, malfunctions, deficiencies, deviations, defective material and equipment, abnormal occurrences, nonconformances, and out-of-control processes, including the failure to follow procedures.

NMC implements a corrective action program to promptly identify, control, document, classify, and correct conditions adverse to quality. In addition, for significant conditions adverse to quality, the program provides for cause evaluation and corrective actions to prevent recurrence. Provisions are also made to ensure that corrective actions for significant conditions adverse to quality are completed as intended and are not inadvertently nullified by subsequent actions. Results of evaluations of conditions adverse to quality are analyzed to identify trends. Significant conditions adverse to quality and significant adverse trends are reported to responsible management.

Prior to installation, nonconforming items, services or activities are reviewed and accepted, rejected, repaired, or reworked, and are identified and controlled to prevent their inadvertent test, installation or use.

In establishing requirements for corrective action, NMC commits to compliance with NQA-1, 1994, Basic Requirements 15 and 16, and Supplement 15S-1.

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## A.7 Regulatory Commitments

### A.7.1

Through this QATR, NMC commits to compliance with the following:

- 10CFR50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants"
- 10CFR Part 71, Subpart H, "Quality Assurance for Packaging and Transportation of Radioactive Material"
- 10CFR Part 72, Subpart G, "Quality Assurance for Licensing Requirements for the Independent Storage of Spent Nuclear Fuel and High-Level Radioactive Waste,"
- 10CFR Part 21, "Reporting of Defects and Non-Compliance"
- General Design Criterion 1, of Appendix A to 10 CFR Part 50
- 10 CFR 50.55a, "Codes and standards"

### A.7.2

When applicable, for Class 1, 2, and 3 items covered by Section III of the ASME Boiler and Pressure Vessel Code, the code Quality Assurance requirements are supplemented by the guidance of applicable regulatory guides (see A.7.3).

### A.7.3

NMC also is committed to carrying out the provisions of certain nuclear quality assurance industry standards, other than ASME NQA-1. This commitment includes compliance with the Regulatory Positions of related NRC Regulatory Guides and Generic Letters, as specifically described below. Commitment to a particular Regulatory Guide does not constitute commitment to Regulatory Guides or other standards that may be referenced therein, unless otherwise noted.

- Regulatory Guide 1.8, Revision 3, May 2000, "Qualification and Training of Personnel for Nuclear Power Plants" (ANS 3.1-1993) – In lieu of Regulatory Positions C.1 and C.2, staff qualification requirements are as delineated in each site's Technical Specifications. Staff training for positions identified in 10CFR50.120 is accomplished according to programs accredited by the National Nuclear Accrediting Board of the National Academy for Nuclear Training that implement a systematic approach to training. NMC does not commit to follow ANS 3.1-1993, but may implement applicable sections for selected positions in addition to the committed requirements.
- Safety/Regulatory Guide 1.26, Revision (site specific) "Quality Group Classifications and Standards for Water-, Steam-, and Radioactive Waste-Containing Components of Nuclear Power Plants" – Commitment to Safety/Regulatory Guide 1.26 is site specific, as required by the approved UFSAR/License at each NMC site. Other sites may use this guidance to assist in establishing the lists of equipment to which this QAP applies, or for other purposes.
- Regulatory Guide 1.28, Revision 3, August 1985, "Quality Assurance Program Requirements (Design and Construction)" (ASME NQA-1, 1983a) – NMC does not commit to compliance with position C.1 of this Regulatory Guide; instead of establishing

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three levels of qualification provided in Nonmandatory Appendix 2A-1, NMC establishes initial qualification requirements and determines individual qualification through evaluation of education, training and experience, and through demonstration of capability in performing the type of inspections expected on the job. NMC complies with position C.2 for record retention times, and position C.3.2 for external audits, with the exception that for position C.3.2.2, NMC will review the information described therein as it becomes available through its ongoing receipt inspection, operating experience, and supplier evaluation programs, in lieu of performing a specific evaluation on an annual basis. The results of the reviews are promptly considered for effect on a supplier's continued qualification and adjustments made as necessary (including corrective actions, adjustments of supplier audit plans, and input to third party auditing entities, as warranted). Additionally, results are reviewed periodically to determine if, as a whole, they constitute a significant condition adverse to quality requiring additional action. In lieu of compliance with Regulatory Position C.3.1, NMC establishes independent assessment frequencies as described in section C of this QATR. In lieu of NQA-1 1983a, NMC uses NQA-1 1994.

- Safety/Regulatory Guide 1.29, Revision (site specific) "Seismic Design Classification" – Current NMC plants were designed, constructed and licensed based on criteria available prior to this Regulatory Guide being issued. The specific design criteria and seismic designations are reflected in each plant's UFSAR, and in other docketed analysis. Thus, the commitment to Safety/Regulatory Guide 1.29 is site specific, as required by the approved UFSAR/License at each NMC site. Other sites may use this guidance to assist in establishing the lists of equipment to which this QAP applies, or for other purposes.
- Regulatory Guide 1.30, August 1972, "Quality Assurance Requirements for the Installation, Inspection and Testing of Instrumentation and Electric Equipment," (ANSI N45.2.4-1972/IEEE 336-1971) – NMC substitutes NQA-1 1994, Subpart 2.4/IEEE 336-1985 for N45.2.4 in its commitment to Regulatory Guide 1.30. As noted in Regulatory Position C.1, Subpart 2.4 is being used in conjunction with NQA-1, Part 1, which replaced ANSI N45.2. As noted in Regulatory Position C.2, other industry standards may be referenced; the commitment in this QATR to NQA-1, Subpart 2.4 includes commitment to those standards to the extent necessary to implement Subpart 2.4 requirements. If NRC guidance applies to those referenced standards, it is followed. Regulatory Position C.3 indicates that the requirements of the endorsed standard should also be considered applicable during the operation phase of the nuclear power plant. This is addressed in sections B.12 and B.16 of this QATR, which also establish any necessary exceptions or alternatives to the provisions of Subpart 2.4.
- Regulatory Guide 1.33, Revision 2, February 1978, "Quality Assurance Program Requirements (Operation)" (N18.7) – NQA-1 contains quality assurance requirements equivalent to those of ANSI N18.7, and NMC has included in this QATR the remaining "administrative controls" elements from N18.7 (1976). Therefore, NMC does not commit to compliance with the requirements of ANSI N-18.7. As recommended by Regulatory Position C.1, NMC uses Appendix A of RG 1.33 as guidance in establishing the types of procedures required for plant operation and support. Regulatory Position C.2 is no longer considered valid, as the referenced standards and guidance have now been incorporated into ASME NQA-1 1994, or are addressed specifically in this section. Regulatory Position C.3 does not apply since NMC does not use independent/offsite review. In lieu of compliance with Regulatory Position C.4, NMC establishes

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assessment topics and frequencies as described in section C.3 of this QATR. In lieu of compliance with Regulatory Position C.5, NMC has established appropriate equivalent requirements within this QATR.

- Regulatory Guide 1.36, Revision 0, February 1973, “Nonmetallic Thermal Insulation for Austenitic Stainless Steel” – None of the current NMC plants were committed to this Regulatory Guidance during original construction. Regulatory Guide 1.36 may be used for plant modifications on a case by case basis, but this QATR makes no generic commitment thereto.
  
- Regulatory Guide 1.54, Revision 0, June 1973, “Quality Assurance for Protective Coatings Applied to Nuclear Power Plants” (N101.4-1972) - Commitment to Regulatory Guide 1.54 is site specific, as required by the approved UFSAR/License at each NMC site.
  
- Regulatory Guide 1.37, March 1973, “Quality Assurance Requirements for Cleaning of Fluid Systems and Associated Components of Water-Cooled Nuclear Power Plants,” (ANSI N45.2.1-1973) – NMC substitutes NQA-1 1994, Subpart 2.1 for N45.2.1 in its commitment to Regulatory Guide 1.37. As noted in Regulatory Position C.1, other industry standards may be referenced; the commitment in this QATR to NQA-1, Subpart 2.1 includes commitment to those standards to the extent necessary to implement Subpart 2.1 requirements. If NRC guidance applies to those referenced standards, it is followed. Regulatory Positions C.3, C.4 and C.5 recommend alterations to certain provisions of N45.2.1. The provisions of NQA-1, Subpart 2.1 establish requirements that are consistent with those recommendations. Regulatory Position C.2 indicates that the requirements of the endorsed standard should be used during the operations phase “when applicable.” This is addressed in sections B.7 and B.16 of this QATR, which also establish any necessary exceptions or alternatives to the provisions of Subpart 2.1.
  
- Regulatory Guide 1.38, Revision 2, May 1977, “Quality Assurance Requirements for Packaging, Shipping, Receiving, Storage, and Handling of Items for Water-Cooled Nuclear Power Plants,” (ANSI N45.2.2-1972) – NMC substitutes NQA-1 1994, Subpart 2.2 for N45.2.2 in its commitment to Regulatory Guide 1.38. As noted in Regulatory Position C.1.a, other industry standards may be referenced; the commitment in this QATR to NQA-1, Subpart 2.2 includes commitment to those standards to the extent necessary to implement Subpart 2.2 requirements. If NRC guidance applies to those referenced standards, it is followed. Regulatory Position C.1.b modifies a provision of N45.2.2 such that the minimum load for dynamic testing to re-rate hoisting equipment for special lifts becomes 110% of the rated load. The Handling section (7) of NQA-1, Subpart 2.2 defers to the provisions of Subpart 2.15. NMC does not commit to Subpart 2.15, as there is no current NRC guidance regarding the other provisions of this part. For purposes of compliance to Regulatory Guide 1.38, Position C.1.b, NMC commits to follow the guidance as stated. Regulatory Positions C.1.c, C.1.e, C.2.a, C.2.b, C.2.c, C.2.d and C.2.e recommend alterations to certain provisions of N45.2.2. The provisions of NQA-1, Subpart 2.2 establish requirements that are consistent with those recommendations. Regulatory Position C.1.d indicates that the requirements of the endorsed standard should be used during the operations phase “when applicable.” This is addressed in section B.7 of this QATR, which also establishes any necessary exceptions or alternatives to the provisions of Subpart 2.2.

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- Regulatory Guide 1.39, Revision 2, September 1997, “Housekeeping Requirements for Water-Cooled Nuclear Power Plants,” (ANSI N45.2.3-1973) – NMC substitutes NQA-1 1994, Subpart 2.3 for N45.2.3 in its commitment to Regulatory Guide 1.39. As noted in Regulatory Position C.1, other industry standards may be referenced; the commitment in this QATR to NQA-1, Subpart 2.3 includes commitment to those standards to the extent necessary to implement Subpart 2.3 requirements. If NRC guidance applies to those referenced standards, it is followed. Regulatory Position C.2 indicates that the provisions of section 3.2.3 of N45.2.3 are not part of the Regulatory endorsement. As NQA-1, Subpart 2.3, section 3.2.3 has the same wording as N45.2.3, the Regulatory Position is applicable and will be followed in NMC’s implementation of Subpart 2.3. Regulatory Position C.3 indicates that the endorsed standard is “applicable for housekeeping activities during the operations phase that are comparable to those occurring during construction.” This is addressed in section B.7 of this QATR, which also establishes any necessary exceptions or alternatives to the provisions of Subpart 2.3.
  
- Regulatory Guide 1.94, Revision 1, April 1976, “Quality Assurance Requirements for Installation, Inspection, and Testing of Structural Concrete and Structural Steel During the Construction Phase of Nuclear Power Plants,” (ANSI N45.2.5-1974) – NMC substitutes NQA-1 1994, Subpart 2.5 for N45.2.5 in its commitment to Regulatory Guide 1.94; however, Subpart 2.5 includes requirements for soils and foundations which were not included in N45.2.5, and the commitment to Subpart 2.5 herein does not include commitment to those requirements. As noted in Regulatory Position C.1, other industry standards may be referenced; the commitment in this QATR to NQA-1, Subpart 2.5 includes commitment to those standards to the extent necessary to implement Subpart 2.5 requirements. If NRC guidance applies to those referenced standards, it is followed. Regulatory Position C.2 recommends using the general planning provisions of N45.2.5 in conjunction with Regulatory Guide 1.55, which has since been withdrawn; therefore, this position is no longer applicable. Regulatory Positions C.3 and C.4 recommend alterations to certain provisions of N45.2.5. The provisions of NQA-1, Subpart 2.5 are consistent with those recommendations. Applicability and use of Subpart 2.5 is addressed in sections B.12 and B.16 of this QATR, which also establish any necessary exceptions or alternatives to the provisions of Subpart 2.5.
  
- Regulatory Guide 1.116, Revision 0-R, May 1977, “Quality Assurance Requirements for Installation, Inspection, and Testing of Mechanical Equipment and Systems,” (ANSI N45.2.8-1975) – NMC substitutes NQA-1 1994, Subpart 2.8 for N45.2.8 in its commitment to Regulatory Guide 1.116. As noted in Regulatory Position C.1, other industry standards may be referenced; the commitment in this QATR to NQA-1, Subpart 2.8 includes commitment to those standards to the extent necessary to implement Subpart 2.8 requirements. If NRC guidance applies to those referenced standards, it is followed. Regulatory Position C.3 recommends using section 5 of N45.2.8 in conjunction with Regulatory Guide 1.68 for pre-operational, cold functional, and hot functional testing. While section 5 of NQA-1, Subpart 2.8 provides the same requirements, it is anticipated that NMC plants, since they are already beyond these tests, will not need to implement Regulatory Guide 1.68. If testing in accordance with Regulatory Guide 1.68 becomes necessary, NMC will comply with the guidance of the Regulatory Guide 1.116 position. Regulatory Position C.2 indicates that the endorsed standard should be “followed for those applicable operations phase activities that are comparable to activities occurring during the construction phase.” This is addressed in

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sections B.12 and B.16 of this QATR, which also establish any necessary exceptions or alternatives to the provisions of Subpart 2.8.

- Regulatory Guide 1.152, Revision 1, January 1996, “Criteria for Digital Computers in Safety Systems of Nuclear Power Plants” - None of the current NMC plants were committed to this Regulatory Guidance during original construction. Regulatory Guide 1.152 may be used for plant modifications on a case by case basis, but this QATR makes no generic commitment thereto.
- Generic Letter 89-02/EPRI-NP-5652 (March 1988, and supplements through March 1993) – NMC commits to compliance with the endorsed industry guidance regarding selection and qualification of commercial grade suppliers and dedication of commercial grade items for use in safety related applications.
- Branch Technical Position CMEB 9.5-1, Revision 2, July 1981 (Positions C.2 and C.4) – NMC complies with the administrative control and quality assurance provisions of the cited sections for fire protection activities. Application of the provisions of this QATR to fire protection activities provides elements of control consistent with position C.4. Compliance with the remainder of the [technical] positions of NUREG 0800, Section 9.5.1 and CMEB 9.5.1 is site specific, as addressed in each plant UFSAR or Fire Protection Program.
- Regulatory Guide 1.143, Revision 2, November 2001, “Design Guidance for Radioactive Waste Management Systems, Structures and Components Installed in Light-water-Cooled Nuclear Power Plants” (Position C.7) – NMC commits to the quality assurance guidance cited in Position C.7. Compliance with the remainder of the [technical] positions of Regulatory Guide 1.143 is site specific, as addressed in each plant UFSAR.
- Regulatory Guide 4.15, Revision 1, February 1979, Quality Assurance for Radiological Monitoring Programs (Normal Operations) – Effluent Streams and the Environment” – NMC commits to compliance with Regulatory Guide 4.15.
- Regulatory Guide 7.10, Revision 1, June 1986, “Establishing Quality Assurance Programs for Packaging Used in the Transport of Radioactive Material” – NMC commits to implement the quality assurance guidance for activities related to the packaging and transport of radioactive material that are under its control. Quality Assurance for the design, fabrication and licensing of shipping containers is the responsibility of the container certificate holders.
- Regulatory Guide 1.155, Revision 0, August 1988, “Station Blackout” (Position C.3.5) - NMC commits to the quality assurance guidance cited in Position C.3.5, Appendix A. Compliance with Appendix B and the remainder of the [technical] positions of Regulatory Guide 1.155 is site specific, as addressed in each plant UFSAR or License commitments.
- Regulatory Guide 1.97, Revision 3, May 1983, “Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident” (Table 1, paragraph 5) – In lieu of the Regulatory Guides listed in the Table, NMC commits to the Regulatory Guidance and industry standards for quality assurance

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as described in this QATR. Commitment to the technical provisions of Regulatory Guide 1.97 is site specific as addressed in each plant UFSAR or other licensing commitments.

- Generic Letter 85-06, April 1985, "Quality Assurance Guidance for ATWS Equipment That Is Not Safety-Related" - NMC commits to the quality assurance guidance cited of the Generic Letter.
- Regulatory Issue Summary 2000-18, October 2000, "Guidance on Managing Quality Assurance Records in Electronic Media" – Should NMC choose electronic media storage as a means of maintaining required records, NMC will comply with the guidance of this Regulatory Issue Summary.

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## **B PERFORMANCE/VERIFICATION**

### **B.1 Methodology**

Personnel who work directly or indirectly for NMC are responsible for the achievement of acceptable quality in the work covered by this QATR. This includes design, engineering, procurement, manufacturing, construction, installation, start-up, maintenance, modifications, and operations.\* NMC personnel performing verification activities are responsible for verifying the achievement of acceptable quality. Activities governed by the QAP are performed as directed by documented instructions, procedures and drawings that are of a detail appropriate for the activity's complexity and effect on safety. Instructions, procedures and drawings specify quantitative or qualitative acceptance criteria as applicable or appropriate for the activity, and verification is against these criteria. Provisions are established to designate or identify the proper documents to be used in an activity, and to ascertain that such documents are being used.

### **B.2 Design Control**

NMC has established and implements a program to control the design of items that are subject to the provisions of this QATR (see A.1). The program includes provisions to control design inputs, processes, outputs, changes, interfaces, records and organizational interfaces. These provisions assure that design inputs (such as design bases and the performance, regulatory, quality, and quality verification requirements) are correctly translated into design outputs (such as specifications, drawings, procedures, and instructions) such that the final design output can be related to the design input in sufficient detail to permit verification. The program defines the interface controls (internal and external between participating design organizations and across technical disciplines) necessary to control the development, review, approval, release, distribution and revision of design inputs and outputs.

NMC design processes provide for design verification (as described in Section B.3) that items and activities subject to the provisions of this QATR are suitable for their intended application, consistent with their effect on safety. Changes to final designs (including field changes) are subjected to these controls, which include measures commensurate with those applied to original plant design. Design changes and disposition of nonconforming items as "use as is" or "repair" are reviewed and approved by the responsible NMC design authority.

NMC maintains records sufficient to provide evidence that the design was properly accomplished. These records include the final design output and any revisions thereto, as well as record of the important design steps (eg, calculations, analyses and computer programs) and the sources of input that support the final output.

\*As NMC is an organization whose purpose is operating nuclear power plants, this QATR does not address "decommissioning" as an activity within its scope. Should NMC become involved in plant decommissioning, this QATR will be revised, or a separate QATR developed, to assure appropriate programmatic controls are applied to that activity.

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In addition, temporary design changes (temporary modifications), such as temporary bypass lines, electrical jumpers and lifted leads, and temporary trip-point settings, are controlled by procedures that include requirements for appropriate installation and removal verifications and status tracking.

In establishing its program for design control, NMC commits to compliance with NQA-1, 1994, Basic Requirement 3, and Supplement 3S-1, Sections 1, 2, 3, 5, 6, and 7.

### **B.3 Design Verification**

The NMC design control program includes requirements for verifying the acceptability of design activities and documents, consistent with their effect on safety. This includes design inputs, design outputs and design changes. Design verification procedures are established and implemented to assure that an appropriate verification method is used, the appropriate design parameters to be verified are chosen, the acceptance criteria are identified, and the verification is satisfactorily accomplished and documented. Verification methods may include, but are not limited to, design reviews, alternative calculations and qualification testing. Testing used to verify the acceptability of a specific design feature demonstrates acceptable performance under conditions that simulate the most adverse design conditions expected for item's intended use.

NMC completes design verification activities before the design outputs are used by other organizations for design work, and before they are used to support other activities such as procurement, manufacture or construction. When such timing cannot be achieved, the unverified portion of the design is identified and controlled such that, in all cases, the design verification is completed before relying on the item to perform its intended safety function.

The NMC design verification can be performed by the designer's immediate supervisor, provided (1) the supervisor did not specify a singular design approach or rule out certain design considerations and did not establish the design inputs used in the design, or (2) the supervisor is the only technically qualified individual capable of performing the verification, and (3) the need is individually documented and approved in advance by the supervisor's management. The frequency and effectiveness of the use of supervisors as design verifiers are independently assessed, as provided in Section C of this QATR, to guard against abuse.

In establishing its program for design verification, NMC commits to compliance with NQA-1, 1994, Basic Requirement 3, and Supplement 3S-1, Section 4.

### **B.4 Procurement Control**

NMC establishes and implements controls to assure that purchased items (components, spares and replacement parts necessary for plant operation, refueling, maintenance and modifications) and services are subject to quality and technical requirements at least equivalent to those specified for original equipment or specified by properly reviewed and approved revisions to assure the items are suitable for the intended service, and are of acceptable quality, consistent with their effect on safety. These controls include provisions such that:

- Where original technical or quality assurance requirements cannot be determined, an engineering evaluation is conducted and documented by qualified staff to establish appropriate requirements and controls to assure that interfaces, interchangeability, safety, fit and function, as applicable, are not adversely affected or contrary to applicable regulatory requirements.

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- Items are inspected (see B.12) and identified and stored (see B.6 and B.7) to protect against damage, deterioration or misuse.
- Prospective suppliers of safety-related items and services are evaluated to assure that only qualified suppliers are used. Qualified suppliers are periodically evaluated to assure they continue to provide acceptable products and services. Industry programs, such as those applied by ASME, NUPIC, or other established utility groups, are used as input or the basis for supplier qualification whenever appropriate. In addition, NMC commits to Position C.3.2 of Regulatory Guide 1.28, Revision 3, for auditing and evaluation of suppliers, with the exception that for position C.3.2.2, NMC will review the information described therein as it becomes available through its ongoing receipt inspection, operating experience, and supplier evaluation programs, in lieu of performing a specific evaluation on an annual basis. The results of the reviews are promptly considered for effect on a supplier's continued qualification and adjustments made as necessary (including corrective actions, adjustments of supplier audit plans, and input to third party auditing entities, as warranted). In addition, results are reviewed periodically to determine if, as a whole, they constitute a significant condition adverse to quality requiring additional action. NMC considers that other 10 CFR 50 licensees, Authorized Nuclear Inspection Agencies, National Institute of Standards and Technology, or other State and Federal agencies which may provide items or services to NMC plants are not required to be evaluated or audited.
- Applicable technical, regulatory, administrative, quality and reporting requirements (such as specifications, codes, standards, tests, inspections, special processes, and 10CFR21) are invoked for procurement of items and services. Documentary evidence that an item conforms to these requirements is available at the site before relying on the item to perform its intended safety function. These documents are considered records according to section B.15.
- Provisions are made for accepting purchased items and services, such as source verification, receipt inspection, pre- and post-installation tests, certificates of conformance, and document reviews. Acceptance actions are completed to ensure that procurement, inspection, and test requirements, as applicable, have been satisfied before relying on the item to perform its intended safety function.
- Controls are imposed for the selection, determination of suitability for intended use (critical characteristics), evaluation, receipt and acceptance of commercial-grade or "off-the-shelf" items to assure they will perform satisfactorily in service in safety related applications.

In establishing controls for procurement, NMC commits to compliance with NQA-1, 1994, Basic Requirements 4 and 7, and Supplements 4S-1 and 7S-1, with the following exceptions:

- For Supplement 4S-1, section 2.3, which requires procurement documents to require a quality program that complies with NQA-1, NMC may apply other nationally recognized and NRC endorsed quality standards, such as N45.2, as appropriate to the circumstances of the procurement, and may also elect to purchase items or services commercially available and then dedicate them for safety-related service per Generic Letter 89-02/EPRI NP-5652.

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- For Supplement 7S-1, section 8.1, documentary evidence that items conform to procurement requirements need not be available at the site prior to item installation, but will be available at the site prior to placing reliance on the item for its intended safety function.

### **B.5 Procurement Verification**

NMC establishes and implements measures to verify the quality of purchased items and services, whether purchased directly or through contractors, at intervals and to a depth consistent with the item's or service's importance to safety, complexity, quantity and the frequency of procurement. Verification actions include testing, as appropriate, during design, fabrication and construction activities associated with plant maintenance or modifications. Verifications occur at the appropriate phases of the procurement process, including, as necessary, verification of activities of suppliers below the first tier.

In establishing procurement verification controls, NMC commits to compliance with NQA-1, 1994, Basic Requirement 7 and Supplement 7S-1.

### **B.6 Identification and Control of Items**

NMC establishes and implements provisions for the identification and control of items to prevent the use of incorrect or defective items. This includes controls for consumable materials and items with limited shelf life. The identification of items is maintained throughout fabrication, erection, installation and use so that the item can be traced to its documentation, consistent with the item's effect on safety. Identification locations and methods are selected so as not to affect the function or quality of the item.

In establishing provisions for identification and control of items, NMC commits to compliance with NQA-1, 1994, Basic Requirement 8 and Supplement 8S-1.

### **B.7 Handling, Storage and Shipping**

NMC establishes and implements provisions to control the handling, storage, shipping, cleaning and preservation of items to prevent inadvertent damage, loss or deterioration. These provisions include specific procedures, when required to maintain acceptable quality, for cleaning, handling, storage, packaging, shipping and preserving items important to safety. Items are appropriately marked and labeled during packaging, shipping, handling and storage to identify, maintain and preserve the item's integrity and indicate the need for special controls. Special controls (such as containers, shock absorbers, accelerometers, inert gas atmospheres, specific moisture content levels and temperature levels) are provided when required to maintain acceptable quality.

In establishing provisions for handling, storage and shipping, NMC commits to compliance with NQA-1, 1994, Basic Requirement 13 and Supplement 13S-1. NMC also commits to compliance with the requirements of NQA-1, 1994, Subpart 2.2, with the following exceptions:

- Subpart 2.2, section 2.2 establishes criteria for classifying items into protection levels. Instead of classifying items into protection levels, NMC plants may establish controls for the packaging, shipping, handling and storage of such items on a case-by-case basis with due regard for the item's complexity, use, and sensitivity to damage. Prior to installation or use, the items are inspected and serviced as necessary to assure that no damage or deterioration exists which could affect their function.

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- Subpart 2.2, section 5.2.2 requires receiving inspections be performed in an area equivalent in environmental controls to those for the level of storage of the item. At NMC plants, receiving inspection area environmental controls may be less stringent than the storage environmental requirements for the item. Such inspections are performed in a manner and in an environment which does not endanger the required quality of the item.
- Subpart 2.2, section 7.1 refers to Subpart 2.15 for requirements related to handling of items. The scope of Subpart 2.15 includes hoisting, rigging and transporting of items for nuclear power plants. This scope exceeds the scope of the NRC's original endorsement of ANSI N45.2.2 in Regulatory Guide 1.38, and establishes requirements for which there is no NRC regulatory position. In lieu of compliance with Subpart 2.15, NMC establishes and implements controls over hoisting, rigging and transport activities to the extent necessary to protect the integrity of the items involved, as well as potentially affected nearby structures and components. Where required, NMC complies with applicable hoisting, rigging and transportation regulations and codes.

Housekeeping practices during normal operations and maintenance activities, including refueling, are established to account for the control of radiation zones and other conditions or environments that could affect the quality of structures, systems and components within the plant. This includes control of cleanness of facilities and materials, fire prevention and protection, disposal of combustible material and debris, control of access to work areas, protection of equipment, radioactive contamination control and storage of solid radioactive waste. Housekeeping practices assure that only proper materials, equipment, processes and procedures are used and that the quality of items is not degraded as a result. Necessary procedures or work instructions, such as for electrical bus and control center cleaning, cleaning of control consoles, and radioactive decontamination are developed and used.

In addition, NMC commits to compliance with the requirements of NQA-1, 1994, Subpart 2.1, to establish appropriate provisions for the cleaning of fluid systems and associated components; and Subpart 2.3, to establish appropriate provisions for housekeeping; with the following exceptions:

- Subpart 2.1, sections 3.1 and 3.2 establish criteria for classifying items into cleanness classes and requirements for each class. Instead of using the cleanness level system of Subpart 2.1, NMC plants may establish cleanness requirements on a case-by-case basis, consistent with the other provisions of Subpart 2.1. NMC establishes appropriate cleanliness controls for work on safety related equipment to minimize introduction of foreign material and maintain system/component cleanliness throughout maintenance or modification activities, including documented verification of absence of foreign materials prior to system closure.
- Instead of the five-level zone designation in Subpart 2.3, NMC bases its control over housekeeping activities on a consideration of what is necessary and appropriate for the activity involved. The controls are effected through procedures or instructions which, in the case of maintenance or modification work, are developed on a case-by-case basis. Factors considered in developing the procedures and instructions include cleanliness control, personnel safety, fire prevention and protection, radiation control and security. The procedures and instructions make use of standard janitorial and work practices to the extent possible.

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### **B.8 Test Control**

NMC establishes and implements testing programs to demonstrate that items subject to the provisions of this QATR will perform satisfactorily in service, that the plant can be operated safely and as designed, and that the coordinated operation of the plant as whole is satisfactory. These programs include criteria for determining when testing is required, such as proof tests before installation, pre-operational tests, post-maintenance tests, post-modification tests, inservice tests, and operational tests (such as surveillance tests required by Plant Technical Specifications), to demonstrate that performance of plant systems is in accordance with design intent. Programs also include provisions for establishing and adjusting test schedules and maintaining status for periodic or recurring tests. Tests are performed according to applicable procedures that include, consistent with the effect on safety, (1) instructions and prerequisites to perform the test, (2) use of proper test equipment, (3) acceptance criteria, and (4) mandatory verification points as necessary to confirm satisfactory test completion. Test results are documented and evaluated by the organization performing the test and reviewed by the appropriate authority having responsibility for the item being tested. If acceptance criteria are not met, retesting is performed as needed to confirm acceptability following correction of the system or equipment deficiencies that caused the failure.

In establishing provisions for testing, NMC commits to compliance with NQA-1, 1994, Basic Requirement 11 and Supplement 11S-1.

### **B.9 Measuring and Test Equipment Control**

NMC establishes and implements provisions to control the calibration, maintenance, and use of measuring and test equipment, including installed plant instrumentation, that provide information important to safe plant operation. The provisions cover equipment such as indicating and actuating instruments and gages, tools, reference and transfer standards, and nondestructive examination equipment. The provisions assure that:

- Measuring and test equipment is calibrated at specified intervals on the basis of the item's required accuracy, intended use, frequency of use, and stability characteristics or other conditions affecting its performance. Alternatively, equipment may be calibrated immediately before and after use if a defined interval is not appropriate.
- Measuring and test equipment is labeled, tagged or otherwise controlled to indicate its calibration status and provide traceability to calibration test data or records.
- Calibrations are performed against standards that have an accuracy of at least four times the required accuracy of the equipment being calibrated. When this is not possible, the standards have an accuracy that ensures the equipment being calibrated will be within the required tolerance.
- Where possible, calibration standards are traceable to appropriate national standards. Calibration standards have greater accuracy than the standards being calibrated, except where the same accuracy as the instruments being calibrated can be shown to be adequate for the service requirements.
- Measuring and test equipment found out of calibration is tagged or segregated and not used until it is successfully re-calibrated. An evaluation is performed to determine the

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acceptability of any items measured, inspected or tested with an out-of-calibration device from the time of the previous calibration.

In establishing provisions for control of measuring and test equipment, NMC commits to compliance with NQA-1, 1994, Basic Requirement 12, Supplement 12S-1 and Subpart 2.16 for establishing appropriate requirements for calibration and control of measuring and test equipment, including installed plant instrumentation, with the following exception:

- Section 5.5 of IEEE 498-85 (NQA-1, Subpart 2.16) requires all M&TE to be labeled. As stated above, NMC plants may not label certain M&TE, such as installed instrumentation, but provide other means of identification so appropriate controls can be implemented. This exception also applies to Section 7.2.1 of IEEE 336-85 (NQA-1, Subpart 2.4).

### **B.10 Inspection, Test and Operating Status**

NMC establishes and implements measures to identify the inspection, test and operating status of items and components subject to the provisions of this QATR in order to maintain personnel and reactor safety and avoid unauthorized operation of equipment. Where necessary to preclude inadvertent bypassing of inspections or tests, or to preclude inadvertent operation, these measures require the inspection, test or operating status be verified before release, fabrication, receipt, installation, test or use. These measures also establish the necessary authorities and controls for the application and removal of status indicators or labels. Equipment control provisions for workmen's protection comply with applicable federal and state OSHA regulations.

In establishing measures for control of inspection, test and operating status, NMC commits to compliance with NQA-1, 1994, Basic Requirement 14.

### **B.11 Special Process Control**

NMC establishes and implements provisions to assure that special processes that require interim process controls to assure quality, such as welding, heat treating, chemical cleaning, and nondestructive examination, are controlled. These provisions include assuring that special processes are accomplished by qualified personnel using qualified procedures and equipment. Special processes are performed in accordance with applicable codes, standards, specifications, criteria or other specially established requirements. Special processes are those where the results are highly dependent on the control of the process or the skill of the operator, or both, and for which the specified quality cannot be fully and readily determined by inspection or test of the final product.

In establishing measures for the control of special processes, NMC commits to compliance with NQA-1, 1994, Basic Requirement 9 and Supplement 9S-1, as well as the applicable ASME Boiler and Pressure Vessel Code provisions established via 10CFR50.55a.

### **B.12 Inspection**

NMC establishes and implements provisions for inspections to assure that items, services and activities affecting safety meet established requirements and conform to applicable documented instructions, procedures and drawings. Inspection may also be applied to items, services and activities affecting plant reliability. Types of inspections may include those verifications related to procurement, as discussed in B.4 and B.5, such as source, in-process, final, and receipt

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inspection, as well as maintenance, modification, in-service, and operational activities. Inspections are carried out by properly qualified persons independent of those who performed or directly supervised the work.

Inspection planning (for those activities subject to inspection) identifies the characteristics and activities to be inspected, the inspection techniques, the acceptance criteria and the organization responsible for performing the inspection. Inspection planning identifies required hold points, beyond which work is not to proceed without the consent of the inspection organization. Provisions for ASME Boiler and Pressure Vessel Code Authorized Inspections are included when required.

Inspection results are documented by the inspector and approved by authorized personnel. If acceptance criteria are not met, corrected areas are reinspected.

In establishing inspection requirements, NMC commits to compliance with NQA-1, 1994, Basic Requirement 10, Supplement 10S-1 and Subpart 2.4. In addition, for situations comparable to original construction, NMC commits to compliance with the requirements of Subparts 2.5 and 2.8 for establishing appropriate inspection requirements.

### **B.13 Corrective Action**

NMC establishes and implements provisions to assure that personnel have both the responsibility and authority to identify conditions adverse to quality, and the opportunity to suggest, recommend or provide solutions to resolve the condition. Provisions also include verification of resolution of significant issues (see also section A.6). Reworked, repaired and replacement items are inspected and tested to meet the original inspection or test requirements, or appropriately specified alternatives (see also sections B.8 and B.12).

If evidence indicates that common components in safety related systems have performed unsatisfactorily, compensatory or corrective measures are planned prior to replacement or repair of such components. Replacement components receive adequate testing or are of a design for which experience indicates a high probability of satisfactory performance. Consideration is given to phased replacement to permit inservice performance to be evaluated and minimize the possibility of systemic failure.

In establishing provisions for corrective action and control of non-conforming items, NMC commits to compliance with NQA-1, 1994, Basic Requirements 15 and 16, and Supplement 15S-1.

### **B.14 Document Control**

NMC establishes and implements provisions to specify the format and content (see Appendix B for procedures), and control the development, review, approval, issue, use and revision, of documents that specify quality requirements or prescribe activities affecting quality or safe operation to assure the correct documents are being employed. These provisions assure that specified documents are reviewed for adequacy, approved prior to use by authorized persons, and distributed according to current distribution lists and used at the location where the prescribed activity takes place. Procedures are reviewed by qualified persons, independent of the preparer, as designated by the Plant Manager. Procedure review includes determination whether additional cross-discipline reviews are required. Provisions include establishing levels of use, such as requiring the document to be present at the work location. Documents subject

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to control provisions include, but are not limited to, drawings (design, as-built), engineering documents (calculations, analyses, specifications, computer codes, Updated Final Safety Analysis Reports, Plant Technical Specifications), and procedures (administrative, operating, emergency operating, maintenance, calibration, surveillance, inspection, test). Other documents, such as those related to procurement, corrective actions, and assessments, are controlled as defined by the provisions and commitments cited in those sections of this QATR. Controlled copies of instructions and procedures are made available to and used by the persons performing the activity covered. New or revised controlled documents are made available in a timely fashion to support ongoing work and preclude use of incorrect information. Superseded documents are identified or removed from availability. Each site maintains documentation that describes how implementing documents are maintained to assure that QAP requirements are met and are not inadvertently removed in later revisions.

Revisions to controlled documents are reviewed for adequacy and approved for release by the same organization(s) as originally did so, or by other designated organizations that are qualified and sufficiently knowledgeable of the requirements and intent of the original document. NMC also establishes programmatic procedure preparation, review and usage controls that ensure procedures are technically and administratively correct. These controls ensure that procedures are reviewed when pertinent source material is revised (such as when Technical Specifications are revised), when unusual incidents occur, when plant modifications are made, and when significant deficiencies are identified. Procedures may also be reviewed because industry experience reviews, use during job execution or training, self-assessments, or independent assessments identify deficiencies or opportunities for improvement. Revisions are made as necessary.

Temporary changes to approved procedures that do not change the intent are approved by two members of plant staff knowledgeable in the areas affected by the procedure. Temporary changes to procedures identified in Appendix B are approved by two members of plant staff knowledgeable in the areas affected by the procedure, at least one of whom is a person holding an active senior reactor operator's license. Temporary changes are documented and, if appropriate, incorporated in the next revision of the procedure.

In establishing provisions for document control, NMC commits to compliance with NQA-1, 1994, Basic Requirement 6 and Supplement 6S-1.

### **B.15 Records**

NMC establishes and implements provisions to ensure that sufficient records of items and activities affecting quality are generated and maintained to reflect completed work. Such records may include, but are not limited to, design, engineering, procurement, manufacturing, construction, inspection, test, installation, modification, operations, maintenance, corrective action and assessment. The provisions establish requirements for records administration, including generation, receipt, preservation, storage, safekeeping, retrieval and final disposition.

NMC uses the list of records in Non-mandatory Appendix 17A-1, supplemented by the recommended retention times established in Regulatory Guide 1.28, position C.2 (Table 1), to establish the types of records that will be created and retained in support of plant operation. In cases where local or State retention requirements are more restrictive than the regulatory guidance, the local requirements are met. In addition, when using electronic records storage and retrieval systems, NMC complies with NRC guidance in RIS 2000-18.

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In establishing provisions for records, NMC commits to compliance with NQA-1, 1994, Basic Requirement 17 and Supplement 17S-1, with the following exception:

- Supplement 17S-1, section 4.2(b) requires records to be firmly attached in binders or placed in folders or envelopes for storage in steel file cabinets or on shelving in containers. For hard-copy records maintained by NMC plants, the records are suitably stored in steel file cabinets or on shelving in containers, except that methods other than binders, folders or envelopes may be used to organize the records for storage.

### **B.16 Plant Maintenance**

NMC establishes controls for the maintenance or modification of items and equipment subject to this QATR to ensure quality at least equivalent to that specified in original design bases and requirements, such that safety-related structures, systems and components are maintained in a manner that assures their ability to perform their intended safety function(s). Maintenance activities (both corrective and preventive) are scheduled and planned so as not to unnecessarily compromise the safety of the plant. Permission to release equipment or systems for maintenance is granted by designated operating personnel who are responsible to verify that the equipment or system can be released and determine how long it may be out of service. This includes attention to the potentially degraded degree of protection when one subsystem of a redundant safety system has been removed for maintenance. Release is documented. When equipment is ready to be returned to service, operating personnel place the equipment in operation and verify and document its functional acceptability. In completing maintenance and restoring equipment, attention is given to restoration of normal conditions, such as removal of jumpers or signals used in maintenance or testing, or such as returning valves, breakers or switches to proper operating positions.

In establishing controls for plant maintenance, NMC commits to compliance with NQA-1, 1994, Subpart 2.18, with the following exceptions:

- Section 2.3.a requires cleanliness during maintenance to be in accordance with Subpart 2.1. NMC commitment to Subpart 2.1 is described in section B.7.
- Section 2.7 requires the application of Subparts 2.4, 2.5 and 2.8 for inspections of installation activities. NMC commitment to Subparts 2.5 and 2.8 is limited to activities comparable in nature and extent to those during original construction (see B.12). Inspections (verifications) of maintenance or modification activities are established, conducted and documented as required by Section B.12 to establish a suitable level of confidence in affected structures, systems, or components. The inspection criteria in Subparts 2.5 and 2.8 may be used in establishing required inspections for maintenance and minor modifications.

### **B.17 Computer Software Control**

NMC establishes and implements provisions to assure that computer software used in applications affecting safety is prepared, documented, verified and tested, and used such that the expected output is obtained and configuration control maintained. To this end NMC commits to compliance with the requirements of NQA-1 1994, Supplement 11S-2 and Subpart 2.7 to establish the appropriate provisions.

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## **C. ASSESSMENT**

### **C.1 Methodology**

NMC establishes programs for reviews and assessments to verify that activities covered by this QATR are performed in conformance with the requirements established, review significant proposed plant changes, tests and procedures, verify that reportable events are promptly investigated and corrected, and detect trends which may not be apparent to the day-to-day observer. These programs are, themselves, reviewed for effectiveness as part of the overall assessment process, as described herein.

NMC uses self-assessment (performed by or for the group responsible for the activity being assessed) and independent assessment (performed by the Nuclear Oversight organization) to monitor overall performance, identify anomalous performance and precursors of potential problems, and verify satisfactory resolution of problems. Persons responsible for carrying out these assessments are cognizant of day-to-day activities such that they can act in a management advisory function with respect to the scope of the assessment. Both self-assessments and independent assessments are accomplished using instructions or procedures that provide detail commensurate with the assessed activity's complexity and importance to safety.

NMC plants maintain plant operating review committees to review overall plant performance, and advise site Management on matters related to nuclear safety. Appendix A establishes the requirements for these committees.

In establishing the independent assessment program, NMC commits to compliance with NQA-1, 1994, Basic Requirement 18 and Supplement 18S-1, with the following clarification:

- In lieu of the term "audit," substitute "independent assessment(s)."

### **C.2 Self-assessment**

NMC uses self-assessments performed by or for the group responsible for the activity being assessed to identify anomalous performance and precursors of potential problems. When line organizations perform self-assessments, their approach is technically and performance oriented with focus on the quality of the end product as well as on compliance with procedures and processes. The objective of self-assessment is to verify compliance, improve performance and achieve excellence. Results of self-assessments are reported in an understandable form and in a timely fashion to a level of management having the authority to effect corrective action and verify satisfactory resolution of problems.

### **C.3 Independent Assessment**

NMC has established a program of planned and periodic performance-based independent assessments to monitor overall performance and confirm that activities affecting quality comply with the QAP and that the QAP is effectively implemented. The organization performing independent assessment (Nuclear Oversight) is technically and performance oriented, with its focus on the quality of the end product and the effective implementation of procedures and processes. Persons performing independent assessments do not have direct responsibility for any area being assessed, and do not report to a management position with immediate responsibility for the activity being assessed. NMC assessment resources may be

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supplemented with technical specialists as needed. The independent assessment program provides comprehensive independent evaluations of activities and procedures. Planning for independent assessments identifies the characteristics and activities to be assessed and the relevant performance and/or acceptance criteria. Independent assessments are then conducted using these predetermined criteria. Scheduling and resource allocation for independent assessments are based on the status, performance, and effect on safety of the activity or process (topic) being assessed. Scheduling is dynamic to provide for response to developing performance issues and resources are supplemented as necessary when QAP effectiveness is in question. Activities having immediate effect on safety, such as Operations or Maintenance, are independently assessed on a continuing basis. Other topics, as identified in Table 1, where performance metrics, corrective action history and effectiveness, process/personnel stability, self-assessments, and response to operating experience provide sufficient evidence of satisfactory performance, may receive less frequent independent assessment attention, while topics with recent process/personnel changes or unsatisfactory or declining performance trends receive more frequent assessments. A Nuclear Oversight expert panel documents the bases for its decisions regarding which topics (from Table 1) receive independent assessments at what frequency, such that the topics identified in Table 1 are reviewed annually as candidates for independent assessment. Certain activities, as identified in Table 2, receive independent assessments at frequencies established by related NRC rules. In addition, independent assessments include examination of selected procedures to verify that the procedure review and revision controls of section B.14 are effectively implemented.

Results of independent assessments are reported in an understandable form and in a timely fashion to a level of management having the authority to effect corrective action. Nuclear Oversight conducts timely follow-up action, including re-assessment of deficient areas, as necessary to establish adequacy of corrective actions.

Independent assessment results are documented and reviewed by Nuclear Oversight management and by management having responsibility for the area assessed. In addition, Nuclear Oversight activities are periodically assessed for effectiveness. Results are documented and reported to responsible management.

Nuclear Oversight provides for assessment of work carried out under the requirements of the QAP that is delegated to other (non-NMC) entities.

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**Table 1  
Topics Subject to Performance-based Independent Assessment Considerations**

<b>Topic</b>	<b>Primary 10CFR50, Appendix B Criteria*</b>
Design Control <ul style="list-style-type: none"> <li>• Modifications</li> <li>• System Engineering</li> <li>• Accident Analysis</li> <li>• Core Design</li> </ul>	III – Design Control
Procurement	IV – Procurement Document Control VII – Control of Purchased Material, Equipment and Services
Document Control	V - Instructions, Procedures and Drawings VI – Document Control
Records Management	XVII – Quality Assurance Records
Inspection/Quality Verification <ul style="list-style-type: none"> <li>• Quality Control</li> <li>• Inservice Inspection</li> </ul>	X – Inspection XIV – Inspection, Test and Operating Status XV – Nonconforming Materials, Parts and Components
Control of M&TE/Installed Plant Instruments	XII – Control of Measuring and Test Equipment
Material Control	VIII – Identification and Control of Materials, Parts and Components XIII – Handling, Storage and Shipping
Special Process Control	IX – Control of Special Processes
Test Control <ul style="list-style-type: none"> <li>• Post-maintenance/modification</li> <li>• Surveillance</li> <li>• Inservice Testing</li> </ul>	XI – Test Control XIV – Inspection, Test and Operating Status XV – Nonconforming Materials, Parts and Components
Corrective Action Program	XVI - Corrective Action
Assessment <ul style="list-style-type: none"> <li>• Management Reviews</li> <li>• Independent Assessment</li> </ul>	II - Quality Assurance Program XVIII - Audits
Training <ul style="list-style-type: none"> <li>• Operator Training</li> <li>• Technical/Support Staff Training</li> </ul>	II - Quality Assurance Program
“Q”-Lists/Determination of QAP Applicability to SSCs	II - Quality Assurance Program
Organization <ul style="list-style-type: none"> <li>• Industrial Safety</li> <li>• Operating Experience</li> <li>• Regulatory Affairs</li> </ul>	I - Organization
Operations <ul style="list-style-type: none"> <li>• Plant Operations**</li> <li>• Equipment Control</li> <li>• Refueling</li> </ul>	XIV – Inspection, Test and Operating Status

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<b>Topic</b>	<b>Primary 10CFR50, Appendix B Criteria*</b>
Maintenance** <ul style="list-style-type: none"> <li>• Preventive</li> <li>• Corrective</li> <li>• Planning/Scheduling</li> </ul>	VIII – Identification and Control of Materials, Parts and Components XIII – Handling, Storage and Shipping XIV – Inspection, Test and Operating Status XV – Nonconforming Materials, Parts and Components
Engineering Programs	IX - Control of Special Processes
Radiological Protection <ul style="list-style-type: none"> <li>• Environmental Monitoring</li> <li>• Radiation Protection</li> <li>• Radioactive Waste Control</li> </ul>	NA (10CFR71, Subpart H)
Chemistry	NA
Independent Spent Fuel Storage	NA (10CFR72, Subpart G)

\*The identified criteria are the ones primarily controlling important aspects of the activity. Other criteria have general applicability to nearly all activities, such as Criterion V, VI, XVI and XVII, and are therefore not listed for each topic.

\*\*Subject to continuing assessment.

**Table 2  
Topics Subject to Regulatory-related Independent Assessment Frequencies**

<b>Topic</b>	<b>Frequency</b>	<b>Basis</b>
Emergency Planning	Annual	10CFR50.54(t)
Fitness for Duty	Annual	10CFR26.80
Access Authorization (Contractor Programs)	Biennial Annual	10CFR73.56(g)
Site Security	Annual	10CFR73.55(g)(4)
Fire Protection <ul style="list-style-type: none"> <li>• Prevention, Detection and Response</li> <li>• Alternate Shutdown Capability</li> </ul>	Biennial (includes use of a non-site, qualified fire protection specialist)	Generic Letter 82-21

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**Appendix A**

**Plant Operating Review Committee**

**1.0 General**

The Plant Operating Review Committee (PORC) is responsible to the Plant Manager for advice on all plant-related matters concerning nuclear safety. The requirements for personnel, committee composition, meeting frequency, quorum and meeting records are identified in implementing procedures. A general description of these areas is included below. (Note: Each plant may name this function differently. Regardless of the name, these requirements are met.)

**2.0 Composition**

PORC is comprised of a minimum number of members as designated by the Plant Manager and detailed in implementing procedures. All members are qualified in accordance with implementing procedure requirements that meet site Technical Specifications. Membership includes representation from at least the following disciplines: Operations, Maintenance, Engineering, Radiation Protection and Chemistry.

Alternate chairmen and members may be appointed by the Plant Manager to serve on a permanent or temporary basis.

Consultants may be utilized to provide expert advice as needed.

**3.0 Meetings**

The PORC meets commensurate with the scope of activities, but minimal frequency requirements are specified in procedures.

Rules for a quorum are established and adhered to. However, no more than a minority of alternates may participate as voting members at any one time.

**4.0 Review**

The PORC reviews at least the following:

- ◆ (1)The Offsite Dose Calculation Manual (ODCM) and the Process Control Program (PCP).
- ◆ (2)Proposed tests or experiments that affect nuclear safety.
- ◆ (3)Proposed changes or modifications to plant systems or equipment that affect nuclear safety.
- ◆ (4)Written 10CFR50.59/72.48 Evaluations to verify that changes to the facility or procedures, tests or experiments did not involve a change in the Technical Specifications or require prior NRC review.
- ◆ (5)Proposed changes to Operating License and Technical Specifications.
- ◆ (6)Reports covering violations of applicable statutes, codes, regulations, orders, Technical Specifications, license requirements, or of internal documents having nuclear safety significance.

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**Appendix A**

**Plant Operating Review Committee**

- ◆ (7) Reports of special reviews and investigations as requested by the Site Vice President, Site Director, or Plant Manager.
- ◆ (8) Events reportable in writing to the NRC according to applicable regulations.
- ◆ (9) Any other matter related to nuclear safety requested by the Site Vice President, Site Director or Plant Manager, such as plant operations to detect potential nuclear safety hazards, reports covering any indication of an unanticipated deficiency in some aspect of design or operation of safety-related structures, systems or components, and significant Nuclear Industry operating experience.

**5.0 Authority**

The PORC:

- ◆ Recommends in writing to the Plant Manager approval or disapproval of items reviewed.
- ◆ Renders determinations in writing with regards to whether items (1) through (5), or changes thereto, require prior NRC approval in accordance with 10CFR50.59/72.48.
- ◆ Provides written notification to the onsite management level(s) above the Plant Manager of any disagreements between the PORC and the Plant Manager.

The PORC may advise the Plant Manager on matters related to safe operation and overall performance. The PORC has authority to obtain access to records and personnel as needed to conduct reviews.

In carrying out its review responsibilities, the PORC may establish subcommittees or use designated organizational units to carry out the review. The subcommittees or organizational units regularly report results of reviews for full committee consideration and may recommend items for full committee review as warranted.

**6.0 Records**

The PORC maintains written minutes of each PORC meeting, to include identification of items reviewed, and decisions and recommendations of the Committee. Copies of the minutes are provided to the onsite management position(s) above the Plant Manager. PORC records are retained according to section B.15.

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**APPENDIX B**

**Procedures**

NMC uses procedures to provide an approved, preplanned method of conducting activities affecting safety. As stated in position C.1 of Regulatory Guide 1.33, Revision 2, NMC commits to use Appendix A of Regulatory Guide 1.33 as guidance for establishing the types of procedures that are necessary to control and support plant operation. Procedures are sufficiently detailed for a qualified individual to perform the required function without direct supervision, but may not provide a complete description of the system or plant process.

Guidance is established to identify the manner in which procedures are to be implemented, including identification of those tasks that require (1) the written procedure to be present and followed step by step while the task is being performed, (2) the user to have committed the procedure steps to memory, (3) verification of completion of significant steps, as by initials or signatures or use of check-off lists. Procedures that are required to be present and referred to directly are those developed for extensive or complex jobs where reliance on memory cannot be trusted, tasks that are infrequently performed, and tasks where steps must be performed in a specified sequence. When documentation of an action is specified, the necessary data is recorded as the task is performed.

The format of procedures may vary from plant to plant within NMC; however, procedures include the following elements, as appropriate to the purpose or task covered. These elements are not intended to imply a specific format is required:

**Title/status:** each procedure is given a title descriptive of the work or subject it addresses, and includes a revision number and/or date and an approval status.

**Purpose/Statement of applicability:** the purpose for which the procedure is intended is clearly stated (if not clear from the title).

**References:** applicable references, including reference to appropriate Technical Specifications, are included. References are included within the body of the procedure when the sequence of steps requires other tasks to be performed (according to the reference) prior to or concurrent with a particular step.

**Prerequisites:** identifies those independent actions or procedures that must be accomplished and plant conditions which must exist prior to performing the procedure. A prerequisite applicable to only a specific portion of a procedure is so identified.

**Precautions:** alert the user to those important measures to be used to protect equipment and personnel, including the public, or to avoid an abnormal or emergency situation during performance of the procedure. Cautionary notes applicable to specific steps are included in the main body of the procedure and are identified as such.

**Limitations and actions:** limitations on the parameters being controlled and appropriate corrective measures to return the parameter to the normal control band are specified.

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**Main body:** contains the step-by-step instructions in the degree of detail necessary for performing the required function or task.

**Acceptance criteria:** the quantitative or qualitative criteria against which the success or failure (as of a test-type activity) of the step or action would be judged.

**Check-off lists:** complex procedures use check-off lists (aka checklists) which may be included as part of the procedure or appended to it.

Certain types of procedures are common to all plants. Individual plant terminology may vary from the following, and some procedure types may be combined. Sufficient procedures are maintained to provide appropriate direction for these activities. In amplification to the appropriate elements above, such procedures are further defined as follows:

**System Procedures:** contain instructions for energizing, filling, venting, draining, starting up, shutting down, changing modes of operation and other instructions appropriate for operations of systems related to the safety of the plant. Separate procedures may be developed for correcting off-normal conditions for those events where system complexity may lead to operator uncertainty. System procedures contain check-off lists where appropriate.

**Start-up Procedures:** contain instructions for starting the reactor from cold or hot conditions and establishing power operation. This includes documented determination that prerequisites have been met, including confirmation that necessary instrumentation is operable and properly set; necessary system procedures, tests and calibrations have been completed; and required approvals have been obtained. The main body includes the major steps of the start-up sequence, including reference to appropriate systems procedures. Start-up procedures contain check-off lists where appropriate.

**Shutdown Procedures:** contain instructions for operations during controlled shutdown and following reactor trips, and include instructions for establishing or maintaining hot standby or cold shutdown conditions, as applicable. The major steps involved in shutting down the plant are specified, including instructions for such actions as monitoring and controlling reactivity, load reduction, cooldown rates, activating or deactivating equipment, and provisions for decay heat removal. Check-off lists are used, as appropriate, for confirming completion of major steps in proper sequence.

**Power Operation and Load Changing Procedures:** contain instructions for steady-state power operation and load changing that include provisions for use of control rods, chemical shim, coolant flow channel control, or for any other system available for short- or long-term control of reactivity, making deliberate load changes and adjusting operating parameters.

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## Procedures

**Process Monitoring Procedures:** contain instructions for monitoring performance of plant systems to assure that core thermal margins and coolant quality are maintained in acceptable status at all times, that integrity of fission product barriers is maintained, and that engineered safety features and emergency equipment are in a state of readiness to keep the plant in a safe condition if needed. Maximum and minimum limits for process parameters are appropriately identified.

**Fuel Handling Procedures:** contain instructions for core alterations, accountability of fuel and partial or complete refueling operations that include, for example, continuous monitoring of neutron flux throughout core loading, periodic data recording, audible annunciation of abnormal flux increases, and evaluation of core neutron multiplication to verify safety of loading increments. Procedures are also provided for receipt and inspection of new fuel, and for fuel movements in the spent fuel storage areas. Fuel handling procedures include prerequisites to verify the status of systems required for fuel handling and movement; inspection of replacement fuel and control rods; designation of proper tools, proper conditions for spent fuel movement, proper conditions for fuel cask loading and movement; and status of interlocks, reactor trip circuits and mode switches. These procedures provide requirements for refueling, including proper sequence, orientation and seating of fuel and components, rules for minimum operable instrumentation, actions for response to fuel damage, verification of shutdown margin, communications between the control room and the fuel handling station, independent verification of fuel and component locations, criteria for stopping fuel movements, and documentation of final fuel and component serial numbers and locations.

**Maintenance Procedures:** contain instructions in sufficient detail to permit maintenance work to be performed correctly and safely, and include provisions for conducting and recording results of required inspections or tests. Appropriate referencing to other procedures or vendor manuals is provided. Instructions are also provided, although not necessarily in Maintenance Procedures, for equipment removal and return to service, and appropriate radiation protection measures (such as protective clothing and radiation monitoring).

**Radiation Control Procedures:** contain instructions for implementation of program requirements necessary to meet regulatory commitments, including acquisition of data and use of equipment to perform necessary radiation surveys, measurements and evaluations for the assessment and control of radiation hazards. These procedures provide requirements for monitoring both external and internal exposures of employees, utilizing accepted techniques; routine radiation surveys of work areas; environmental monitoring in the vicinity of the plant; radiation monitoring of maintenance and special work activities, and for maintaining records demonstrating the adequacy of measures taken to control radiation exposures to employees and others.

**Calibration and Test Procedures:** contain instructions for periodic calibration and testing of safety related instrumentation and control systems, and for periodic calibration of measuring and test equipment used in activities affecting the quality of these systems. These procedures provide for meeting surveillance requirements and for assuring measurement accuracy adequate to keep safety related parameters within operational and safety limits.

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## Procedures

**Chemistry-radiochemistry Control Procedures:** contain instructions for chemical and radiochemical activities such as the nature and frequency of sampling and analyses; maintaining coolant quality within prescribed limits; limitations on concentrations of agents that could cause corrosive attack, foul heat transfer surfaces or become sources of radiation hazards due to activation; control, treatment and management of radioactive wastes and control of radioactive calibration sources, including shipping.

**Emergency Procedures:** contain instructions for response to potential emergencies so that a trained operator will know in advance the expected course of events that will identify an emergency and the immediate actions that should be taken in response. Format and content of emergency procedures are based on regulatory and Owner's Group(s) guidance that identify potential emergency conditions and generally require such procedures to include a title, symptoms to aid in identification of the nature of the emergency, automatic actions to be expected from protective systems, immediate operator actions for operation of controls or confirmation of automatic actions, and subsequent operator actions to return the reactor to a normal condition or provide for a safe extended shutdown period under abnormal or emergency conditions.

**Emergency Plan Implementing Procedures:** contain instructions for activating the Emergency Response Organization and facilities, protective action levels, organizing emergency response actions, establishing necessary communications with local, state and federal agencies, and for periodically testing the procedures, communications and alarm systems to assure they function properly. Format and content of such procedures are such that requirements of each site's NRC approved Emergency Plan are met.

**Test and Inspection Procedures:** contain the objectives, acceptance criteria, prerequisites for performing the test or inspection, limiting conditions, and appropriate instructions for performing the test or inspection. These procedures also specify any special equipment or calibrations required to conduct the test or inspection and provide for appropriate documentation and evaluation by responsible authority to assure test or inspection requirements have been satisfied. Where necessary, hold or witness points are identified within the procedures and require appropriate approval for the work to continue beyond the designated point. These procedures provide for recording the date, identification of those performing the test or inspection, as-found condition, corrective actions performed (if any), and as-left condition, as appropriate for the subject test or inspection.

While not specifically a procedure type, **Temporary Procedures** may be used to direct operations during testing, refueling, maintenance and modifications; to provide guidance in unusual situations not within the scope of normal procedures; and to insure orderly and uniform operations for short periods when the plant, a system, or a component of a system is performing in a manner not covered by existing detailed procedures, or has been modified or affected in such manner that portions of existing procedures do not apply. Temporary Procedures include designation of the period of time during which they may be used.

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**APPENDIX C**

**Definitions**

NMC uses the definitions of terms as provided in Section 4 of the Introduction of NQA-1 1994 in interpreting the requirements of NQA-1 and the other standards to which the QATR commits. In addition, definitions are provided for the following terms not covered in NQA-1:

**Administrative controls:** rules, orders, instructions, procedures, policies, practices and designations of authority and responsibility.

**Emergency procedures:** see Appendix B.

**Experiments:** performance of plant operations carried out under controlled conditions in order to establish characteristics or values not previously known.

**Independent Assessment:** planned and documented activity performed to determine by investigation, examination, observation, or evaluation of objective evidence the adequacy of and compliance with established procedures, instructions, drawings, and other applicable documents, and to determine the effectiveness of implementation. Independent Assessment, as used in this QATR, is considered equivalent to the term "audit."

**Independent review:** review completed by personnel not having direct responsibility for the work function under review, regardless of whether they operate as a part of an organizational unit or as individual staff members.

**Maintenance and modification procedures:** written procedures defining the policies and practices by which structures, mechanical, electrical and instrumentation and control systems, and components thereof, are kept in a condition of good repair or efficiency so that they are capable of performing their intended functions.

**Nuclear power plant:** any plant using a nuclear reactor to produce electric power, process steam or space heating.

**Off-normal condition procedures:** written procedures which specify operator actions for restoring an operating variable to its normal controlled value when it departs from its range, or to restore normal operating conditions following a perturbation. (May be called Abnormal, Off-normal or other terms conveying the same intent.)

**On-site operating organization:** on-site personnel concerned with the operation, maintenance and certain technical services.

**Operating activities:** work functions associated with normal operation and maintenance of the plant, and technical services routinely assigned to the on-site operating organization.

**Operating procedures:** written procedures defining the normal methods, means and limits of operation of the nuclear power plant, a plant system or systems, or processes, including actions to be taken by operating personnel for removal from and return to service equipment on which maintenance is to be or has been performed.

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**APPENDIX C**

**Definitions**

**Operational phase:** that period of time during which the principal activity is associated with normal operation of the plant. This phase of plant life is considered to begin formally with commencement of initial fuel loading, and ends with plant decommissioning.

**Review:** a deliberately critical examination, including observation of plant operation, evaluation of assessment results, procedures, certain contemplated actions, and after-the-fact investigations of abnormal conditions (see independent review).

**Supervision:** direction of personnel activities or monitoring of plant functions by an individual responsible and accountable for the activities they direct or monitor.

**Surveillance testing:** periodic testing to verify that safety related structures, systems and components continue to function or are in a state of readiness to perform their functions, and to provide assurance that failures or substandard performance do not remain undetected and that the required reliability of safety related systems is maintained. Such functions include keeping parameters within normal bounds or acting to put the plant in a safe condition if they exceed normal bounds.

**System:** an integral part of nuclear power plant comprising components which may be operated or used as a separate entity to perform a specific function.